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Sustainable development: Harmony with Nature

Harmony with Nature

Report of the Secretary-General

Summary

The present report is submitted pursuant to General Assembly resolution 64/196, in which the Assembly invited Member States, the United Nations system, and other stakeholders to transmit to the Secretary-General their views, experiences and proposals on promoting life in harmony with nature. The Assembly requested the Secretary-General to submit a report on the subject to it at its sixty-fifth session. Drawing on the inputs received, the present report addresses how sustainable development approaches and initiatives have allowed communities gradually to reconnect with the Earth. Concrete recommendations are provided to facilitate further consideration of the theme by Member States.

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I. Introduction

1. In 2009, the General Assembly, by resolution 64/196 entitled "Harmony with Nature", invited Member States, the relevant organizations of the United Nations system, and international, regional and subregional organizations to consider, as appropriate, the issue of promoting life in harmony with nature and to transmit to the Secretary-General their views, experiences and proposals on this issue at the sixty-fifth session of the Assembly. The Assembly further invited Member States, the relevant organizations of the United Nations system, and international, regional and subregional organizations to make use of International Mother Earth Day (see resolution 63/278), as appropriate, to promote activities and exchange opinions and views on conditions, experiences and principles for a life in harmony with nature. This is the first report of the Secretary-General on Harmony with Nature.

2. The report benefited from inputs received from Member States, regional groups and, major groups regarding Harmony with Nature and International Mother Earth Day. It further draws information from a number of United Nations reports and publications relevant to the theme and released in recent years, particularly during the period 2009-2010.

3. The report aims to reflect upon the relationship that humans have had with the Earth as well as with their own existence across different stages of civilization, from ancient times to the twenty-first century. In doing so, the report looks at how humans have viewed their existence through the history of medicine and how this is closely related to how they have perceived their relationship with the Earth.

4. The report further addresses how the holistic nature of the concept of sustainable development, pioneered in the early 1980s, has allowed humans to gradually reconnect with the Earth and with themselves. The report places special emphasis on the social and environmental pillars of sustainable development and their interface, an insufficiently discussed theme in international forums.

5. Given that environmental degradation, biodiversity loss, poverty, hunger, malnutrition, diseases and economic instability persist despite the analytical capability and technological capacity deployed by current civilization towards eradicating them, this report looks in particular at the current status of the trends of the educational system on sustainable development worldwide and how education for sustainable development could be strengthened. For sustainable development to succeed, education for sustainable development needs to be mainstreamed worldwide.

6. The report provides an overview of how the lifestyle of the twenty-first century, through its consumption and production patterns, has severely affected the Earth's carrying capacity and how human behaviour has been the result of a fundamental failure to recognize that human beings are an inseparable part of nature and that we cannot damage it without severely damaging ourselves.[1] The report has also benefited from the work undertaken in recent years by Nobel laureates who have interacted with the United Nations, namely Eric Chivian, Muhammad Yunus and Joseph Stiglitz, in the fields of the environment and social and economic issues, respectively.

[1] Eric Chivian, ed., *Biodiversity: Its Importance to Human Health — Interim Executive Summary* (Center for Health and the Global Environment, Harvard Medical School, 2002).

II. International legislation on harmony with nature

7. As early as 1970, the first Earth Day was held as a national teach-in on the environment. Since then, an important number of commemorations related directly to Mother Earth have been held. The following are just some of the few international days in 2010 to honour Mother Earth and its natural resources: International Mother Earth Day, International Day of Nowruz, International Day for Biological Diversity, World Water Day and International Day for the Preservation of the Ozone Layer. The General Assembly declared 2010 the International Year of Biodiversity (resolution 61/203).

8. In 1972, the United Nations Conference on the Human Environment held in Stockholm brought the industrialized and developing nations together to delineate the "rights" of the human family to a healthy and productive environment. A series of such meetings followed, for example on the rights of people to adequate food, to sound housing, to safe water, to access to means of family planning. The recognition of the need to revitalize humanity's connection with nature led to the creation of global institutions within the United Nations system.

9. In 1980, the International Union for the Conservation of Natural Resources (IUCN) published the World Conservation Strategy, a precursor to the concept of sustainable development. The Strategy asserted that conservation of nature cannot be achieved without development to alleviate the poverty and misery of hundreds of millions of people, and stressed the interdependence of conservation and development in which development depends on caring for the Earth. Unless the fertility and productivity of the planet are safeguarded, the human future is at risk.[2]

10. In 1982, 10 years after the Stockholm Conference, the World Conservation Strategy initiative culminated with the adoption of the World Charter for Nature. The Charter stated that mankind is a part of nature and life depends on the uninterrupted functioning of natural systems (General Assembly resolution 37/7, annex).

11. In 1983, the World Commission on Environment and Development was created; by 1984, it was constituted as an independent body by the General Assembly, and asked to formulate a "global agenda for change". In 1987, in its report, "Our Common Future", the Commission advanced the understanding of global interdependence and the relationship between economics and the environment previously introduced by the World Conservation Strategy. The report wove together social, economic, cultural and environmental issues and global solutions. It reaffirmed that the environment does not exist as a sphere separate from human actions, ambitions, and needs, and therefore it should not be considered in isolation from human concerns. The environment is where we all live; and development is what we all do in attempting to improve our lot within that abode. The two are inseparable (A/42/427, pp. 13-14).

12. In June 1992, the first United Nations Conference on Environment and Development was held in Rio de Janeiro and adopted an agenda for environment and development in the twenty-first century, comprising the Rio Declaration on Environment and Development, which recognizes each country's right to pursue social and economic progress and assigned to States the responsibility of adopting a model of sustainable development; Agenda 21, a programme of action for

[2] *World Conservation Strategy: Living Resource Conservation for Sustainable Development* (IUCN/UNEP/WWF, 1980).

sustainable development; and the Statement of Principles concerning forests. Agreements were also reached on the Convention on Biological Diversity and the Framework Convention on Climate Change. That Conference for the first time mobilized the major groups and legitimized their participation in the sustainable development process, which has remained a constant until today. For the first time also, the lifestyle of the current civilization was addressed in principle 8 of the Rio Declaration, in which the urgency of a deep change in consumption and production patterns was expressly and broadly acknowledged by State leaders.[3] Agenda 21 further reaffirmed that sustainable development was delimited by the integration of the economic, social and environmental pillars.

13. The spirit of the Conference was captured by the expression "Harmony with Nature", brought to the fore with the first principle of the Rio Declaration: "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature".[4]

14. In 1993, the Economic and Social Council set up the Commission on Sustainable Development to follow up on the implementation of Agenda 21. In June 1997, the General Assembly dedicated its nineteenth special session to designing a Programme for the Further Implementation of Agenda 21 (resolution S-19/2, annex). In 2002, 10 years after the Rio Declaration, a follow-up conference, the World Summit on Sustainable Development, was convened in Johannesburg to renew the global commitment to sustainable development. The Conference agreed on the Johannesburg Plan of Implementation and further mandated the Commission on Sustainable Development to follow up on the implementation of sustainable development.

15. Since the Rio Conference, sustainable development has become part of the international lexicon. The concept has been incorporated in many United Nations declarations and its implementation, while complex, has been at the forefront of world institutions and organizations working in the economic, social and environmental sectors. However, they all recognize how difficult it has been to grant the environmental pillar the recognition enjoyed by the other two pillars despite the many calls by scientists and civil society signalling the vulnerability and precariousness of the Earth since the 1960s.

16. An explanation for this dilemma may be found in the relationship that civilizations over the course of centuries have had with the Earth and also with their own existence, particularly since the industrial revolution. The following sections describe the evolution of that relationship and its lessons for achieving harmony with nature today.

III. Harmony with nature: the ancient heritage of humankind

17. Around the world, ancient civilizations have a rich history of understanding the symbiotic connection between human beings and nature. Ancient sites, many of which the United Nations Educational, Scientific and Cultural Organization (UNESCO) has recognized as part of the world heritage, have a part to play in the spiritual and material life of the twenty-first century.

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[3] See *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992*, vol. I, *Resolutions Adopted by the Conference* (United Nations publication, Sales No. E.93.I.8 and corrigendum) resolution 1, annex I.

[4] Ibid.

18. Egyptian civilization recognized the vital links between humans, nature and the divine. As the Nile flowed north, the ancient Egyptians believed the sun rose on one side of the river and set on the other and passed through the underworld to begin the cycle again the next day. The bright star called Sirius announced from the heavens the annual floods which brought irrigation and crop-enriching silt. This marker of time, crucial in the development of the ancient calendar around 5,000 years ago, provided a cyclical background to life's rhythms.[5]

19. The Wudang Mountains in Hubei Province, China, are known for their concentration of Taoist monasteries. Taoism, based on the Tao Te Ching, written in the sixth century B.C.E., began teaching people to follow the patterns of nature. Tao in fact means "the way of nature", and the Taoist Statement on Ecology of 1995 declares that Taoism judges affluence by the number of species. Taoism believes that nature itself is divine and that we should live in harmony with nature's cycles and systems.

20. At Fuji-San and the Kii Mountains of Japan, monastic complexes and shrines recognize the powers of nature, harnessed and magnified through living in harmony with natural cycles.

21. The Vedic philosophy of India has always emphasized the human connection with nature. Vedism is a way of life based on scriptures called Aranyakas, or forest books, which were written by sages who lived in the forest. The Mahabharata, Ramayana, Vedas, Upanishads, Bhagavad Gita, Puranas and Smriti contain some of the earliest messages on ecological balance and the need for people's ethical treatment of nature. They emphasize harmony with nature and recognize that all natural elements hold divinity.[6]

22. In the Americas, indigenous cultures, such as the Incas, have a long tradition of respecting the connection between humans and nature. Throughout the Andes, *Pachamama* is the most widespread name for Mother Earth, normally used in Quechua, Aymara and even in Spanish. Anello de Oliva recorded the term in its fundamental sense: "They also worshipped the fertile earth, which they call *Pachamama*: which means fertile and fruitful Mother Earth".[7] The Andean concept of *Pachamama* conveys the symbiosis between humankind and nature, thereby giving nature its due respect.

23. Perhaps the greatest lesson to be learned from the wisdom of sacred traditions is also the simplest: to honour creation by nurturing a kinship with nature. This assertion is most revealing in how ancient civilizations viewed the human body in relation to Mother Earth and how harmony with nature was the essence of good health.

IV. The evolving relationship of human health with nature

A. Nature and human health integrated

24. Most cultures throughout history have viewed the body as a unified phenomenon animated by mysterious life-giving forces. To search out the origins of medicine is to search out the origins of our very humanity. A close study of the

[5] Lorna Oakes and Lucia Gahlin, *Ancient Egypt* (2005).

[6] Rebecca Hind, *Sacred Places* (2007).

[7] E/C.19/2010/4, para. 19.

principles and practices of any given cultural system of medicine will unearth a commonality that is shared in one way or another with many other systems.

25. Egyptian doctors likened the body to a great land. As their own land was nourished and fed by the rivers and irrigation channels, the human body was similarly nourished by its own flowing streams. Egyptian doctors had power over gods and men.[8]

26. As early as 5000 B.C.E., physician-sages formulating the healing traditions of both traditional Chinese medicine and Ayurvedic medicine from India recognized that human beings were composed of body, mind and spirit, and that health represented a harmonious balance within all three of these aspects of existence, as well as the free flow of invisible vital energy, known in China as *qi* and in India as *prana*, throughout the various body systems. These energies are said to be in constant interaction with external or environmental energies, in other words, with nature.

27. The same tenets were also present in the healing traditions of the druids of Europe and in the traditions of ancient Africa, in native American cultures, and in the cultures of other indigenous peoples. The primary role of healers and physicians in each of those traditions was to instruct others in the art and practice of living harmoniously with themselves and their environment.[9]

28. Greek doctors took a holistic view of their patients, who were seen as the embodiment of natural forces that operated harmoniously in states of health but that could fall out of balance in states of disease. This holistic view meant the whole was greater than the sum of its parts. Such a view also informed the philosophy of the ancient Greek physician Hippocrates (c. 460-c. 370 B.C.E.), the father of Western medicine. Greek doctors considered the four elements of fire, earth, air and water as having a profound influence on both philosophy and medicine.[10]

29. Doctors in medieval Europe continued to view the body in similar terms to those described by their Greek forebears. People accepted that the physical, mental, emotional and spiritual elements of the body were interconnected as one whole.

30. Since then, in healing traditions worldwide, medical wisdom has evolved within a framework that linked health to the state of harmony and disease to a state of disharmony or imbalance, and took into account the multiple factors that contributed to both.

B. Nature and human health separated

31. The roots of conventional medicine, that is the drug- and surgery-based mainstream medical procedures that came to dominate in the early twentieth century, can be traced back to the time of Rene Descartes (1596-1650), the scientist and philosopher whose work led certain of his followers to develop Cartesianism, a

[8] Sameh M. Arab, "Medicine in ancient Egypt". Available from www.arabworldbooks.com/articles8c.htm.

[9] Larry Trivieri, Jr., and John W. Anderson, eds., *Alternative Medicine: The Definitive Guide*, 2nd ed. (Berkeley, California, Celestial Arts, 2002).

[10] Vincent Di Stefano, *Holism and Complementary Medicine* (Allen and Unwin, 2006).

philosophy characterized by its rationalistic, dualistic world view. A consequence of Cartesianism was the separation of the mind from the body.[9]

32. Less than 500 years ago, Andreas Vesalius recorded the first reproducible images of the systematic dissection of the human body in a remarkable series of woodcuts. His work *De humani corporis fabrica* (On the Structure of the Human Body) was published in 1543. It became the first textbook of the new science of anatomy. Newly constructed microscopes began to reveal that each body part and organ system consisted of a mosaic of undreamed-of cellular complexes.[10]

33. As the body and its organ systems came under close scrutiny, it was described increasingly in mechanical and functional terms, and the new medicine increasingly severed its connection with the past and with nature. The four elements of fire, earth, air and water described by Greek doctors were nowhere to be found under the microscope, nor was the human soul that had engaged the attention of both Greek philosophers and Christian theologians over the centuries.

34. In the mid-nineteenth century, the discovery of disease-causing microbes further added to the bedrock of conventional medical theory. At the time there were two opposing theories concerning the cause of disease: one theory held that bacteria and viruses caused illness, the other claimed that such microbes became infectious only if inside the various body systems there existed conditions of imbalance or weakness. The germ theory advocated by Louis Pasteur (1822-1895) became dominant and, as a result, modern medical science greatly expanded its role in the treatment of illness.[9]

35. Starting in the late nineteenth century, epidemiologists identified the relationship between poor sanitation and disease in towns and cities swollen by promises of urban industrialization. Sanitary engineers became bolder in their interventions, sewerage systems and piped water supplies became more commonly available. With improvements in transport systems, urban communities began to benefit from the increasing availability of clean water and a constant supply of fresh food.

36. The earlier ways of medicine were steadily left behind as newer scientific approaches began to make their presence felt. Although the ancient scourges of leprosy, diphtheria, malaria, cholera and tuberculosis have been largely overcome through quarantine, vaccination and the use of antibiotics, recent times have seen the emergence of new and deadly viral diseases and the re-emergence of old plagues and pandemics in different parts of the world.

37. As Western medicine probed further into physiology and biochemistry, the health sciences became ever more specialized, as did the emergent disciplines studying the significance of the social, economic and psychological realities of human life.

C. Nature and human health reintegrated

38. In 1925, Jan Christian Smuts brought back from ancient Greek medicine the term holism. He used it to describe a philosophical position that was directed towards an understanding of whole systems rather than particular events or phenomena. It carries the synergetic understanding that the whole is greater than the sum of its parts.

39. Holism operates at a number of levels. The individual cell is a finely balanced system in constant interaction with its surroundings. The human body is similarly endowed and responds as a totality to both interior and exterior changes. Each of us is subject to environmental influences related directly to our home and work spaces, and to the quality of the air we breathe, the water and fluids we drink, and the foods we consume. Our overall health can be influenced at any or all of these levels. Today, we know that the human immune system can be assisted in its activities by far more than just antibiotic drugs or herbal extracts. At present, society is witnessing in places a reorientation of the medical profession towards a holistic approach to disease and healing.

40. According to the World Health Organization, the use of traditional medicine remains widespread in developing countries, while the use of complementary and alternative medicines is increasing rapidly in developed countries.[11] "Traditional medicine" is a comprehensive term that includes traditional Chinese medicine, Indian ayurveda and Arabic *unani* medicine, and various forms of indigenous medicine.

41. In countries where the dominant health-care system is based on allopathic medicine, or where traditional medicine has not been incorporated into the national health-care system, traditional medicine is often termed "complementary", "alternative" or "non-conventional medicine" and it is widely used. In Africa, up to 80 per cent of the population use traditional medicine to help meet their health-care needs. In Asia and Latin America, populations continue to use traditional medicine as a result of historical circumstances and cultural beliefs. In China, traditional medicine accounts for around 40 per cent of all health care delivered.[11]

42. In many developed countries, complementary, alternative or non-conventional medicine is becoming more and more popular. The percentage of the population which has used traditional medicine at least once is 38 per cent in Belgium, 42 per cent in the United States of America, 48 per cent in Australia, 70 per cent in Canada, and 75 per cent in France. Popular use of traditional medicine is fuelled by concerns about the adverse effects of chemical drugs, questioning of the approaches and assumptions of allopathic medicine, and greater public access to health information. Longer life expectancy has brought with it increased risks of developing chronic, debilitating diseases such as cancer, heart disease and diabetes. For many patients, traditional medicine offers a gentler means of healing than allopathic medicine and patients frequently combine the two.[11]

V. Sustainable development: a holistic paradigm for harmony with nature in the twenty-first century

43. Throughout the world, humankind has become increasingly aware that the ways of our present civilization despite all its material progress have not always been beneficial for the Earth or her peoples. Since the 1960s, scientists, researchers, writers, Governments and civil society have been signalling the precariousness of life on Earth.

44. Applying holistic thinking to all human activities is a complex task. Yet the failure to do so has created serious ecological imbalances and environmental

[11] *WHO Traditional Medicine Strategy 2002-2005*.

degradation. Ultimately, environmentally destructive behaviour is the result of a failure to recognize that human beings are an inseparable part of nature and that we cannot damage it without severely damaging ourselves.[12]

A. Education for sustainable development

45. The holistic concept of sustainable development can guide human beings' efforts to rebalance their relationship with the Earth. Such a rebalancing is urgent, as scientists and researchers remind us that we are running out of time.

46. Education is critical if people are to be motivated and informed to take the necessary actions to mend the damage already incurred and avoid further damage to the Earth and its ecosystems. The focus of environmental education has been on teaching respect of nature, but such respect alone has clearly not changed society's destructive behaviour. Respect and appreciation are the first steps towards developing environmentally aware citizens. Effective learning should manifest itself in changes in values and behaviour.[13]

47. People can draw wisdom from the long-established indigenous beliefs and traditions that, within different contexts and structures, have formed the basis for a life in harmony with nature. The "holistic vision" inherent in all of them and the importance given to being in constant communion with nature is perhaps one of their key lessons.

48. A great environmental awakening occurred in the United States in the 1960s and later spread around the world in the wake of the publication of Rachel Carson's *Silent Spring*. The new consciousness of Spaceship Earth was reinforced by satellite photography and environmental disasters such as major oil spills. In response, increased attention began to be paid to the causes of environmentally damaging behaviours.[14] Since then scientists, researchers, writers, environmentalists, civil society and Governments have contributed thousands of books, reports, documents, initiatives and awareness-raising campaigns at the local, national and global levels. They have all sounded and continue to sound the alarm about the dangers to the Earth and its life-support systems. They have addressed different aspects of environmental challenges and have tried to place the environmental pillar on an equal footing with the social and economic pillars. All of them have sought to promote a holistic view of humans and the Earth.

49. Improving overall basic education, let alone for sustainable development, is by and large a work in progress. In 2010 UNESCO reported that today one in five adults is still not literate, two thirds of them women, while 72 million children are not enrolled in school. Millions of youths leave school without the skills they need to succeed in the workplace. Every year millions of children attend school carrying the burden of malnutrition, ill-health and poverty.[15]

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[12] Eric Chivian, ed., *Biodiversity* (see footnote 1).

[13] Daniel T. Blumstein and Charlie Sayan, "The failure of environmental education (and how we can fix it)", 17 April 2007. Available from www.plosbiology.org.

[14] David Yencken, John Fien and Helen Sykes, eds., *Environment, Education and Society in the Asia-Pacific Local Traditions and Global Discourses* (Routledge, 2000).

[15] UNESCO, *Education for All Global Monitoring Report 2010: Reaching the marginalized*.

50. For those with access to education, students have yet to be educated through all the stages of formal education within an educational framework informed by sustainability, or sustainable development, as an overarching principle. While significant improvements are being made to provide more cohesion within any given discipline, we are still far from looking beyond narrow disciplines.

51. Science education at the university level has become ever more specialized, students choosing not only an academic field but a sub-field and even a sub-field of a sub-field. The fragmentation of knowledge makes it difficult to forge cross-disciplinary links.[16]

52. Efforts are afoot in many parts of the world to strengthen science education and to ensure that it produces graduates not only with strong skills in their respective fields but with a broad, holistic view of the sciences in relation to one another, to other academic disciplines and to the real-world problems of sustainable development which scientific inquiry should help humanity to solve.

53. According to the Board on Science Education of the National Academies, the demand in the United States for students with a solid foundation in science continues to grow, but current science education in the country falls short. Significantly improving science achievement will require coordinated changes in science standards, curricula, laboratories, assessments, professional development, and uses of modern technologies. Recent studies show that there is a long way to go. A National Academy of Sciences report of 2007 recommends revising standards to focus on core ideas, designing curricula to build on students' knowledge of the natural world, and aligning assessments with understanding — in short, an overhaul of the entire system.[17]

54. In July 2010, in order to guide the development of new science education standards, the Board on Science Education circulated a draft Conceptual Framework for New Science Education Standards. The framework will identify and articulate the core ideas in science in the disciplines of life sciences, physical sciences, Earth and space sciences, and engineering and technology, cross-cutting ideas and scientific practices. The final report is anticipated in the winter of 2010.

55. In Europe, the situation is similar. Many studies have highlighted an alarming decline in young people's interest in key science studies and mathematics. The European Commission has set up a group of experts to examine a cross-section of ongoing European initiatives and to draw from the elements of know-how and good practice that could bring about a radical change in young people's interest in science studies. Renewal of science teaching practices, including greater cross-disciplinary fertilization, is being promoted by two initiatives, "Pollen" and "Sinus-Transfer".[18]

56. In Asia and the Pacific, home to two thirds of humanity, environmental education in schools has resulted in many educational initiatives such as revision of syllabuses to infuse environmental perspectives, and the establishment of specialized environmental education centres. However, these initiatives remain

[16] Jean-Marc Coicaud, "How to prepare the next generation better?", lecture at the Tokyo University of Foreign Studies, 9 July 2010.

[17] *Taking Science to School: Learning and Teaching Science in Grades K-8* (National Academies Press, 2007).

[18] European Commission, *Science Education NOW: A Renewed Pedagogy for the Future of Europe* (2007).

limited to an outdated concept of environmental education which tends to favour nature conservation, especially through the study of science and geography, rather than the multidisciplinary bases of sustainable development and the holistic imperatives that education for sustainability should serve. Such initiatives also tend to concentrate on information and awareness-raising campaigns directed at individual behavioural change rather than broader educational or sustainability goals.[19]

57. In contrast to what has occurred in other regions, environmental education in Latin America and the Caribbean has traditionally been more closely related to the social sphere than to the ecological one. Since it was introduced in 1993, the concept of education for sustainable development has been gradually accepted in the region and several international and regional summits and conferences related to education for sustainable development have served to further clarify the concept.[20]

58. It is worth highlighting one of the three subregional initiatives, namely, the Andean-Amazon Plan for Environmental Communication and Education (PANACEA), where Bolivia, Brazil, Chile, Colombia, Ecuador, Peru and Venezuela, coordinated by Peru, are focusing on promoting quality environmental education. Most countries in Latin America have a national policy or strategy on environmental education.[20]

59. In Africa, the education sector features prominently in the New Partnership for Africa's Development (NEPAD) together with health, science and technology as key contributors to human development. This all-encompassing approach to the priority areas of NEPAD reflects the holistic approach to sustainable development and corresponds to the principles underlying education for sustainable development. Therefore, the objectives of the United Nations Decade of Education for Sustainable Development (2005-2014) and the Second Decade of Education in Africa launched by the African Union in 2006 are closely aligned.[21]

60. According to a recent UNESCO midterm review[22] of the Decade of Education for Sustainable Development, in Africa the re-orientation of education towards sustainable development requires the strengthening and boosting of the quality and efficiency of human capacity development initiatives (education, training, community development and public awareness programmes). Education for sustainable development has the potential to contribute significantly to the quality of educational programmes.

61. In the Arab region, the Regional Guiding Framework of Education for Sustainable Development (2005-2014) provides a vision of the activities that could be implemented by any of the partners such as education and training institutions, enterprises, international and regional organizations, civil society and non-governmental organizations, within the framework of the Decade of Education for Development. The events organized within the framework of the Decade are

[19] Yencken, Fien and Sykes, *Environment, Education and Society* (see footnote 14).

[20] UNESCO, Políticas, estrategias y planes regionales, subregionales y nacionales en educación para el desarrollo sostenible y la educación ambiental en América Latina y el Caribe: Decenio de las Naciones Unidas de la Educación para el Desarrollo Sostenible, 2005-2014 (2009).

[21] UNESCO, Draft Strategy of Education for Sustainable Development for Sub-Saharan Africa (June 2006).

[22] UNESCO, *Review of Contexts and Structures for Education for Sustainable Development* (2009).

usually linked to the Education for All goals adopted at Dakar in 2000, the Millennium Development Goals adopted in 2000 and the United Nations Literacy Decade (2003-2012).[23]

62. A key tool whose usage needs to be fully maximized in the educational sector is information and communication technologies. Research shows that students gain insights when they use visualizations to link situations, rather than using only text or static drawings. Such tools can help learners to connect salient information to their existing ideas.[24] Information and communication technologies have an indisputable strategic role in the promotion of education for sustainable development. It is necessary to popularize the skills required for their mastery and promote applications adapted to the social, cultural, economic and technical realities of the South.[25]

63. People living in rural communities far from the city usually have limited access to wider-scale information. Their education curricula insufficiently prepare them to compete with those who have been educated in urban areas. The core idea of community resource centres is to make current information and technologies available to younger generations so that they can learn through means other than formal education. A resource centre also provides opportunities for household women, the elderly and farmers, who should be encouraged to take advantage of the information resources provided by such centres. Community resource centres can play a role in furthering knowledge about education for sustainable development.[26]

64. Cross-disciplinary work is in its infancy and, while initiatives exist, information about them remains limited. There are individual and small-scale initiatives around the world which have yet to become mainstreamed into educational policy and practices on a wider scale.

65. One initiative worth mentioning is the transdisciplinary workshop and book project to explore a broader research agenda in environmental education and related fields of the Board on Science Education. The workshop aims to explore new epistemologies and research directions in environmental education and related fields by creating a platform for dialogue on research philosophy, questions and approaches among scholars from a diversity of environment related disciplines. The transdisciplinary epistemologies and research directions emerging from the dialogue will address issues related to the inability of disciplinary research to solve complex environmental problems, and to the need for incorporating epistemological reflection in cross-disciplinary research. The results will be published in 2011.

66. Another such initiative is the Earth System Science Partnership, established in 2001 by four global environmental change research programmes: DIVERSITAS, the International Geosphere-Biosphere Programme, the International Human Dimensions Programme on Global Environmental Change and the World Climate Research Programme. The Partnership facilitates the study of the Earth's environment as an integrated system in order to understand how and why it is

[23] UNESCO, Regional Guiding Framework of Education for Sustainable Development in the Arab Region (draft, May 2008).

[24] Quintana and others, "A scaffolding design framework for software to support science inquiry", *Journal of the Learning Sciences*, vol. 13, No. 3 (2004).

[25] UNESCO, *Education for All* (see footnote 15).

[26] See E/CN.17/2009/4.

changing, and to explore the implications of those changes for global and regional sustainability. The Partnership developed a new strategy that will provide an internationally coordinated and holistic approach to Earth system science. These programmes, in their individual capacity, have existed since the 1990s but it became apparent that they could not individually address the Earth system-level integrative questions, especially those relating to fundamental issues of energy (carbon), food, water and health.

B. Experiences in promoting harmony with nature in the twenty-first century through sustainable development

67. Since the Rio Conference, countries around the world have stepped up to the challenge of achieving sustainable development. A common theme of the initiatives reported to the Secretariat on harmony with nature has been an emphasis on legislation. Major groups also offered their perspective on the matter, highlighting the need to strengthen stewardship of the global commons. The following are some indicative examples of implementation initiatives.

68. Reducing environmental degradation and preserving forests are among Argentina's priorities. Argentina is promoting the use of solar energy and alternative energies based on specific climate conditions and the resource endowments of rural areas. Microfinancing is also being advanced as a means to combat poverty.

69. The new policy of the Foreign Affairs Ministry of the Plurinational State of Bolivia, of 27 August 2007, embodies the concept of well-being, not only in terms of income but most importantly in terms of respect for cultural identity, community and harmony among human beings and between human beings and nature. Essential components of the policy are based on indigenous peoples' vision. Early in 2009, a new Constitution was promulgated on the basis of such principles.

70. On the basis of the International Covenant on Economic, Social and Cultural Rights, Chile emphasizes that the right to health includes a large range of socio-economic factors that promote a healthy life. This right also extends to a healthy environment, food security, nutrition, access to drinkable water and adequate sanitary conditions.

71. Cuba's environmental law (article 4g of Law 81 of 1 July 1997) embraces sustainable development planning as the basic concept and grants that environmental protection will be included as a requisite in all development programmes, projects and plans.

72. Chapter 7 of Ecuador's Constitution of 2008 states that nature's rights should be taken into account in all planning activities. The rights of nature include the right to have its existence respected in an integral manner, including the maintenance and regeneration of its cycles, structures, functions and evolutionary processes, as well as the right to restoration. The State applies the precautionary principle and has the power to restrict those activities which could lead to the loss of species, the destruction of ecosystems or the permanent alteration of natural cycles.

73. El Salvador places emphasis on regional cooperation to address natural disasters which obstruct sustainable development, including through the establishment of a regional fund to prevent and mitigate natural disasters and to assist in the reconstruction of countries affected by them. It also refers to the

promotion of renewable energy and energy efficiency as tools to promote sustainable development.

74. Mexico has set up a programme for environmental education for sustainability run jointly by the Secretariat of the Environment and Natural Resources and the Secretariat of Public Education.

75. Actions to mitigate climate change through sustainable economic growth and lowering carbon emissions are one of Peru's top priorities. Peru has committed itself to stop deforestation of the natural primary forests by 2021.

76. To ensure the sustainability of natural and human resources, Saint Vincent and the Grenadines is constantly reviewing its laws and regulations to reaffirm links tween Mother Nature and food security, poverty eradication, and environmental inability.

77. In Gabon, to reduce the impact of mining activities, environmental and social impact assessments are required through the different stages of mining activities. To combat chemical pollution of soils and aquifers due to plastic waste, Gabon has banned the production, import and use of plastic bags derived from oil and has replaced them with biodegradable bags.

78. Mali is currently engaged in the implementation of a range of projects such as promoting natural sites, agroforestry preservation and the sustainable management of land.

79. Environmental law reform in South Africa has been rooted in the need for improved access to and the sound management of South Africa's natural resource base. The Constitution guarantees the right to an environment that is not harmful to health or well-being, and the right to have the environment protected while promoting justifiable economic and social development.

80. In preserving and conserving nature for sustainable development, article 59 of the Constitution of Cambodia stipulates an obligation of the State to protect the environment, keep natural resources balanced, and manage soundly all natural resources.

81. As the incoming Chair of the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity, Japan focuses on addressing post-2010 targets to improve the state of biodiversity from the current level as well as to increase sustainably the benefits of ecosystem services.

82. Italy emphasizes that education for sustainable development should be promoted as a key policy tool to foster respect for and understanding of different cultures and embrace contributions from them. Indigenous peoples should be partners in the development of educational programmes. In the framework of the Marrakech Task Force on Education for Sustainable Consumption, the document *Here and Now* summarizes the importance of teaching respect for diversity of cultures and making sustainable lifestyle choices.[27]

[27] UNEP, *Here and Now: Education for Sustainable Consumption – Recommendations and Guidelines* (2010).

83. Early in 2007, Montenegro adopted a national strategy on sustainable development promoting the integration of ecological, economic and social principles that will guide the future development of the country.

84. Spain supports a programme of work on a legal article covering the traditional knowledge of indigenous and local communities with traditional lifestyles, recognizing the relevance to the conservation and sustainable use of biological diversity. It also stresses the importance of seeing ecosystems as representing natural capital that generates essential services for human welfare.

85. In the United States, in October 2009, the President signed Executive Order 13514, which has far-reaching ramifications for federal energy conservation and environmental policy. The order includes requirements for federal agencies to improve energy efficiency, for the mitigation of greenhouse gas emissions, and for water conservation, green procurement, waste management and recycling.

86. The European Union recognizes that the natural resource base for human life and development is in great danger and that fundamental changes in the way societies produce and consume are vital for achieving sustainable development. The effective protection and sustainable use of global biodiversity are essential for the social, economic and environmental development of all.

87. Major groups highlight the notion of the "global commons": all material and intellectual resources have to be administered for the good of all mankind, under a perspective of shared and joint ownership. In 2009, Elinor Ostrom became the first woman to be awarded the Nobel Prize in Economic Sciences, in partnership with Oliver Williamson, for her work on the conceptualization and empirical investigation of institutions for the management of the common property resources.

88. States Members of the United Nations have expressed, in General Assembly resolution 64/236, their determination to renew political commitment to sustainable development, a commitment which comes not a minute too soon. For, as Eric Chivian writes, "on the basis of habitat destruction alone, ... as many as two thirds of all species on Earth could be lost by the end of this century, a proportion of lost species that matches the great extinction event, 65 million years ago, that wiped out the dinosaurs. That event was most likely the result of a giant asteroid striking the Earth; this one we alone are causing."[28] By committing themselves, therefore, to sustainable development, Member States have embraced a holistic approach to healing the Earth, which, like holistic medicine, addresses causes rather than symptoms.

89. In May 2010, at the eighteenth session of the Commission on Sustainable Development, Governments acknowledged that the world's depletion of certain natural resources and rapid environmental degradation are the result of unsustainable consumption and production patterns which have led to adverse consequences not only for the Earth but for the health and overall well-being of humanity. Therefore, in order to meet the basic needs of a growing population within the Earth's limited resources, there is a need to devise a more sustainable model for production, consumption and the economy as a whole.

90. The European Union has supported sustainable consumption and production through initiatives such as the SWITCH Asia Programme to promote economic

[28] Eric Chivian, ed., *Biodiversity* (see footnote 11).

prosperity and reduce poverty in Asia while encouraging sustainable growth with reduced environmental impact. In addition, since the mid-1990s many European Union member States have developed "product panels" — interactive and cooperative approaches among different stakeholders to develop and disseminate on the market cleaner and more eco-efficient products.

91. Switzerland has provided funds to the United Nations Industrial Development Organization (UNIDO) over the past decade to set up and support national cleaner production centres in about a dozen countries. This joint programme of UNIDO and the United Nations Environment Programme (UNEP) is an example of putting sustainable consumption and production into practice and responds to a request by developing countries for capacity-building and technology cooperation and transfer. Small island developing States in the Caribbean region have benefited from this initiative.

92. In the unprecedented Yasuni-ITT Initiative, Ecuador has decided to abstain indefinitely from exploiting oil reserves estimated at 846 million barrels in the ITT field, equalling 20 per cent of the national oil reserves. In exchange, Ecuador will receive international financial aid to the Yasuni Fund, an international trust fund to be administered by the United Nations Development Programme. By taking this initiative, Ecuador takes a holistic approach to biodiversity conservation, combating poverty, promoting social development and the rights of indigenous peoples, and proposes a new model of cooperation between developed and developing countries based not on the extraction of non-renewable resources but on providing incentives to environmental stewardship that supplies global public goods like biodiversity conservation and climate change mitigation.

93. For Pacific small island developing States, a successful initiative has been the promotion of renewable energy and the establishment of the Asia-Pacific Regional Help Desk on Sustainable Consumption and Production in 2006.

94. In the Asia-Pacific region, the Asia-Pacific Partnership on Clean Development and Climate is an initiative to accelerate the development and deployment of clean energy technologies. The partners, Australia, Canada, China, India, Japan, the Republic of Korea and the United States, have agreed to work with private sector partners to meet goals for energy security, air pollution reduction, and climate change mitigation in ways that promote sustainable economic growth and poverty reduction.

95. Civil society groups have been very effective in bridging realities on the ground with political interest and actions on sustainable consumption and production. Together with the academic community, they have played an important role in raising awareness, developing tools (such as life cycle analysis), facilitating consumer-led projects or certification programmes, and initiating practical local actions. They have contributed to the gradual mainstreaming of sustainability principles in modern lifestyles.

96. The private sector plays a critical role in re-engineering the supply and production chain for sustainability by focusing on introducing the appropriate changes in the production life cycle for increased eco-efficiency, including research and development in environmentally sound technologies, eco-efficient manufacturing, green marketing, and end-of-life management.

C. New directions and approaches

97. At present, alternatives are being examined to devise a more sustainable model for production, consumption and the economy as a whole so as to promote harmony with nature. In this regard, in February 2008, at the request of the Government of France, Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi created the Commission on the Measurement of Economic Performance and Social Progress. "The motivation was that the GDP, as an expression of purely economic growth, no longer satisfies societies' concerns with welfare and sustainability. This is especially the case if our metrics do not take into account sustainability, if current consumption puts in jeopardy, for instance, future living standards. The most obvious cases involve depletion of resources and the degradation of the environment."[29]

98. The Commission acknowledges that no single number can summarize anything as complex and variegated as "society". But, inevitably, certain numbers — in particular GDP — have taken centre stage. The Commission agreed that such a number may be misleading if it were applied to all purposes, and especially as a broader measure of societal performance. It recommended further research into the development of metrics contributing to a better assessment of economic performance and social progress.[30]

99. With regard to the role of the private sector, Muhammad Yunus in his latest book defines social business as a new category of business which excludes the pursuit of profit or the payment of dividends to owners. "All the business savvy developed in conventional business will be very useful, but the goals and values to pursue will be different. While conventional companies exist to make money, these exist to solve social problems while using business techniques and models."[31]

100. Social business and social entrepreneurship are valuable recent innovations, yet their global reach remains modest as compared with that of for-profit business. The corporate social responsibility movement and the civil society watchdog efforts are vitally important to ensure substantial changes in the way companies do business.

VI. Conclusion and recommendations

101. The present technological age has seen an impoverishment in the historical relationship between human beings and nature. Nature has been treated as a commodity that exists largely for the benefit of people, and all environmental problems as solvable with a technological fix. Loss of biodiversity, desertification, climate change and the disruption of a number of natural cycles are among the costs of our disregard for nature and the integrity of its ecosystems and life-supporting processes. As recent scientific work suggests,[32] a number of planetary boundaries are being transgressed and others risk being so in a business-as-usual world.

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[29] Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi, "The measurement of economic performance and social progress revisited: reflections and overview", 16 September 2009. Available from www.stiglitz-sen-fitoussi.fr/en/documents.htm.

[30] Ibid.

[31] Muhammad Yunus, *Building Social Business* (New York, Public Affairs, 2010).

[32] J. Rockstrom and others, "A safe operating space for humanity", *Nature*, vol. 461, No. 7263 (24 September 2009), pp. 472-475.

102. The philosophy of holism, embodied in the concept of sustainable development, rests on an understanding that all things are interconnected and that nothing occurs in isolation. Holism calls for broader perspectives. As the spirit of holism begins to infuse the practice of health care, we come closer to that healing that is needed at all levels. As the wheel of medicine now turns towards a commitment to those principles that further the health of individuals, of society, and of the planet as a whole, so turns the wheel of sustainable development.

103. The submissions of Member States, regional groups, major groups and the United Nations system have revealed a variety of ways in which diverse stakeholders are seeking to promote harmony with nature through sustainable development. Member States may wish to consider the following recommendations:

(a) The UNESCO Education for All initiative and the Decade of Education for Sustainable Development should be further promoted:

(i) To increase children's access to school, and take measures to increase literacy rates, particularly for women, and make information on sustainable development accessible to all, including the most vulnerable and marginalized segments of the population;

(ii) To promote the use of information and communication technologies, in both formal and non-formal education in urban and rural areas, to advance education in general and education for sustainable development in particular, including education on sustainable consumption and production;

(iii) To promote the establishment of resource centres, particularly in rural areas, to bring non-formal education to communities on all aspects of sustainable development. In this regard, the use of information and communication technologies and audio-visual material is essential to bridge the knowledge gap;

(b) In view of the current work being carried out in the educational sector worldwide to upgrade science education and to advance cross-disciplinary science education at all levels within a sustainable development perspective:

(i) An information portal should be created to gather information about the work being undertaken to advance integration and cross-disciplinary work in the sciences and to inform them with a sustainable development perspective;

(ii) A virtual space should be created for natural and social scientists to interact and collaborate to provide substantive analytical inputs to the preparations for the United Nations Conference on Sustainable Development in 2012 and beyond;

(c) In view of the need for a continual updating and upgrading of knowledge, relevant United Nations organizations, institutions, research centres and Nobel laureates should be invited, as appropriate, to provide regular briefings for decision makers on:

(i) The work being carried out in the field of systems thinking;

(ii) The ongoing research being undertaken to integrate the three pillars of sustainable development;

(iii) The work being carried out worldwide to reconcile conventional and complementary medicine in a holistic approach to health in the context of sustainable development.